Claims:

1. A probe/primer for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 3.

2. A probe/primer for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 5.

3. A probe/primer for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 7.

4. A probe/primer for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 9.

5. The probe/primer of any of claims 1-4, wherein said embryonic stem cell is a mammalian embryonic stem cell.

6. The probe/primer of claim 5, wherein said mammalian embryonic stem cell is a human embryonic stem cell.

7. The probe/primer of any of claims 1-4, wherein said probe/primer is detectably labeled.

8. Use of a probe/primer in the manufacture of composition for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that

hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 3.

9. Use of a probe/primer in the manufacture of composition for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 5.

10. Use of a probe/primer in the manufacture of composition for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 7.

11. Use of a probe/primer in the manufacture of composition for identifying an embryonic stem cell, wherein said probe/primer comprises a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in SEQ ID NO: 9.

12. The use of any of claims 8-11, wherein said embryonic stem cell is a mammalian embryonic stem cell.

13. The use of claim 12, wherein said mammalian embryonic stem cell is a human embryonic stem cell.

14. A method of determining whether a cell is an embryonic stem cell, comprising

(a) contacting a population of cells, wherein one or more of said cells may be an embryonic stem cell, with a probe/primer comprising a nucleic acid that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid represented in any of SEQ ID NO: 3, 5, 7, or 9; and

(b) identifying the one or more cells comprising a nucleic acid to which said probe/primer hybridizes under said stringent conditions,

wherein the one or more cells that comprise a nucleic acid to which said probe/primer hybridizes is determined to be an embryonic stem cell.

15. The method of claim 14, wherein said embryonic stem cell is a mammalian embryonic stem cell.

16. The method of claim 15, wherein said mammalian embryonic stem cell is a human embryonic stem cell.

17. The method of claim 14, wherein said probe/primer is detectably labeled.

18. Use of a primer pair in the manufacture of a composition for identifying embryonic stem cells, wherein said primer pair comprises SEQ ID NO: 13 and SEQ ID NO: 14.

19. Use of a primer pair in the manufacture of a composition for identifying embryonic stem cells, wherein said primer pair comprises SEQ ID NO: 15 and SEQ ID NO: 16.

20. Use of a primer pair in the manufacture of a composition for identifying embryonic stem cells, wherein said primer pair comprises SEQ ID NO: 19 and SEQ ID NO: 20.

21. Use of a primer pair in the manufacture of a composition for identifying embryonic stem cells, wherein said primer pair comprises SEQ ID NO: 11 and SEQ ID NO: 12.

22. The use of any of claim 18-21, wherein said embryonic stem cell is a mammalian embryonic stem cell.

23. The use of claim 22, wherein said mammalian embryonic stem cell is a human embryonic stem cell.

24. An isolated nucleic acid, comprising

(a) a nucleic acid sequence that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid sequence represented in SEQ ID NO: 3, wherein said nucleic acid sequence is specifically expressed in embryonic stem cells, and

(b) a transcriptional regulatory sequence operably linked to said nucleic acid sequence so as to render said nucleic acid suitable for use as an expression vector.

25. An expression vector, capable of replicating in at least one of a prokaryotic cell and a eukaryotic cell, comprising the nucleic acid of claim 24.

26. A host cell transfected with the expression vector of claim 25 and expressing a polypeptide encoded by said nucleic acid.

27. A method of producing a recombinant polypeptide comprising culturing the cell of claim 26 in a cell culture medium to express said polypeptide and isolating said polypeptide from said cell culture.

28. An isolated nucleic acid, comprising

(a) a nucleic acid sequence that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid sequence represented in SEQ ID NO: 5, wherein said nucleic acid sequence is specifically expressed in embryonic stem cells, and

(b) a transcriptional regulatory sequence operably linked to said nucleic acid sequence so as to render said nucleic acid suitable for use as an expression vector.

29. An expression vector, capable of replicating in at least one of a prokaryotic cell and a eukaryotic cell, comprising the nucleic acid of claim 28.

30. A host cell transfected with the expression vector of claim 29 and expressing a polypeptide encoded by said nucleic acid.

31. A method of producing a recombinant polypeptide comprising culturing the cell of claim 30 in a cell culture medium to express said polypeptide and isolating said polypeptide from said cell culture.

32. An isolated nucleic acid, comprising

(a) a nucleic acid sequence that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid sequence represented in SEQ ID NO: 7, wherein said nucleic acid sequence is specifically expressed in embryonic stem cells, and

(b) a transcriptional regulatory sequence operably linked to said nucleic acid sequence so as to render said nucleic acid suitable for use as an expression vector.

33. An expression vector, capable of replicating in at least one of a prokaryotic cell and a eukaryotic cell, comprising the nucleic acid of claim 32.

34. A host cell transfected with the expression vector of claim 33 and expressing a polypeptide encoded by said nucleic acid.

35. A method of producing a recombinant polypeptide comprising culturing the cell of claim 34 in a cell culture medium to express said polypeptide and isolating said polypeptide from said cell culture.

36. An isolated nucleic acid, comprising

(a) a nucleic acid sequence that hybridizes under stringent conditions, including a wash step of 0.2X SSC at 65 °C, to a nucleic acid

sequence represented in SEQ ID NO: 9, wherein said nucleic acid sequence is specifically expressed in embryonic stem cells, and

(b) a transcriptional regulatory sequence operably linked to said nucleic acid sequence so as to render said nucleic acid suitable for use as an expression vector.

37. An expression vector, capable of replicating in at least one of a prokaryotic cell and a eukaryotic cell, comprising the nucleic acid of claim 36.

38. A host cell transfected with the expression vector of claim 37 and expressing a polypeptide encoded by said nucleic acid.

39. A method of producing a recombinant polypeptide comprising culturing the cell of claim 38 in a cell culture medium to express said polypeptide and isolating said polypeptide from said cell culture.

40. A method of promoting an embryonic stem cell phenotype in a cell, comprising administering to said cell an expression vector according to any one of claims 25, 29, 33, or 37.

41. A method of promoting an embryonic stem cell phenotype in a cell, comprising administering to said cell a polypeptide encoded by a nucleic acid according to any one of claims 24, 28, 32, or 36.

42. A method of promoting an embryonic stem cell phenotype in a cell, comprising administering to said cell an effective amount of an agent, wherein said effective amount of said agent is sufficient to increase expression of a nucleic acid comprising a nucleic acid sequence that hybridizes under stringent conditions to any of SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, or SEQ ID NO: 9.

43. A method of inhibiting an embryonic stem cell phenotype in a cell, comprising administering to said cell an effective amount of an agent, wherein said

effective amount of said agent is sufficient to decrease expression of a nucleic acid comprising a nucleic acid sequence that hybridizes under stringent conditions to any of SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, or SEQ ID NO: 9.

44. An antibody specifically immunoreactive with a stem cell specific marker encoded by all or a portion of an nucleic acid sequence represented in SEQ ID NO: 1, 3, 5, 7, or 9.

45. The antibody of claim 44, wherein said antibody is a monoclonal antibody.